

## Output Binary Electrical Function Module

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\* Indicates changes since the last printing.



# Introduction

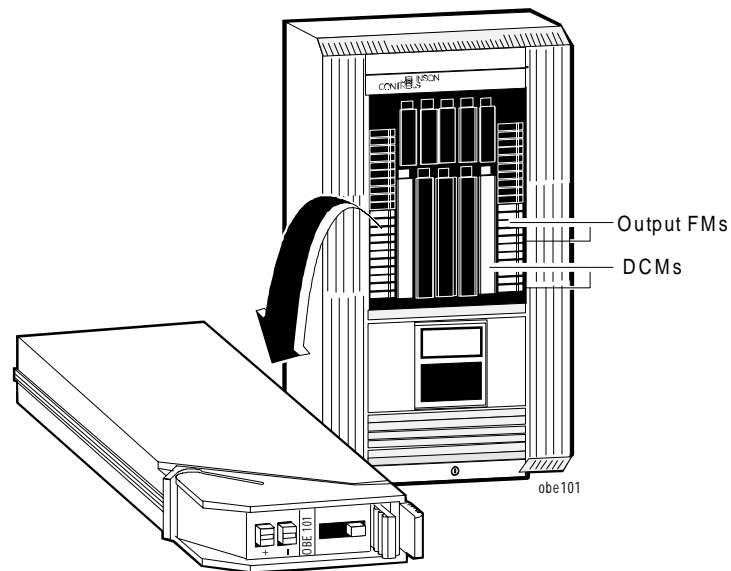
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## *Description*

The Output Binary Electrical (OBE) Function Module is an interface between the DCM and field devices. This function module provides incremental control of a field device. The OBE Function Module features:

- logic for converting DCM digital output into incremental control signals ( $\pm 12$  VDC)
- Auto/Manual (A-M) switch to enable/disable DCM control
- two momentary pushbutton switches (+ and -) for manual intervention
- feedback indication of the Auto/Manual switch setting to the DCM

The OBE Function Module plugs into any one of the bottom ten slots associated with the DCM. Figure 1 shows typical function module locations in the NCU. A five slot panel is pictured.



**Figure 1: OBE Function Module Locations**

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## ***Application***

The OBE Function Module is typically used for incremental control of devices. For example:

- an existing V-9012
- DC servo driven actuators
- existing Johnson Controls incremental controlled devices

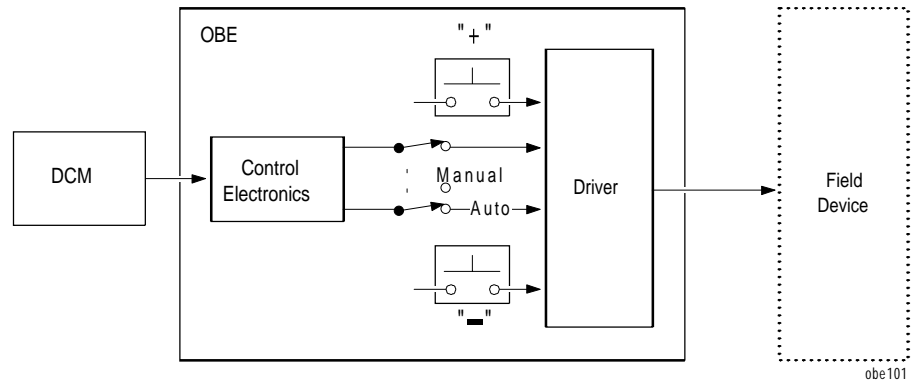
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## ***Capabilities***

**Table 1: OBE Function Module Capabilities**

<b>Capability</b>	<b>Description</b>	<b>Purpose</b>
<b>Input from DCM</b>	DCM inputs a digital command.	Allows DCM to provide automatic control of outputs.
<b>Auto/Manual Switch and Two Momentary Pushbutton Switches</b>	Switch selects one of <ul style="list-style-type: none"><li>- Auto—DCM control of outputs</li><li>- Manual—DCM control disabled</li></ul> Pushbutton switches increment/decrement output in both Auto and Manual modes.	Allows for manual override of DCM control for special situations.  Allows for local/manual control, even if the DCM is not present.
<b>Power on Reset</b>	At low power or after power up, output goes to zero.	Provides controlled restart.
<b>Output to Field</b>	Module outputs 2-wire polarized (+12 V/ -12 V) control signal based on input signal.	Provides incremental control of field devices.

Figure 2 is a functional diagram of the OBE Function Module.



**Figure 2: OBE Function Diagram**

Under DCM control, the process is:

- The DCM provides a signal, which increments or decrements the OBE output. Output signal is +12, 0, or -12 VDC.
- A manually controlled Auto/Manual switch can disable the DCM control of the OBE output. The status of this switch is reported back to the DCM.
- Two pushbuttons (+ and -) provide manual increment and decrement control. These pushbuttons are functional in Auto and Manual modes.

This unit will operate in Manual mode without the DCM present. Power supply must be present.

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## Specifications

**Table 2: OBE Function Module Specifications**

Category	Specifications For Configurations
Product Code Number	FM-OBE101
Output Range	3 states: +12, -12, or OFF.
Output Limits	When ON: Minimum output is 11 V (at 170 mA). Maximum output is 15 V (open circuit).
Output Protection	Maximum current: 325 mA (current foldback) 500 mA (Output leads (3) fused with non-field replaceable fuses.)
Response Time	Maximum: 5 m/sec
Default Condition	Output = 0 VDC on loss of input power.
Source Power	Power is from the PWR in the NCU/NEU.
Operating Environmental Requirements	32 to 122°F (0 to 50°C) 10 to 90% noncondensing RH 86°F (30°C) maximum dew point.
Storage/Shipping Environmental Requirements	-40 to 158°F (-40 to 70°C) 5 to 95% noncondensing RH 86°F (30°C) maximum dew point
Size	0.85 in. H x 2.6 in. W x 7.0 in. L (2.2 cm H x 6.6 cm W x 17.8 cm L)
Weight	0.5 lb (0.22 kg)
Agency Compliance	FCC Part 15 Subpart J - Class A, UL 916, CSA C22.2 No. 205
Agency Listings	UL Listed and CSA Certified as part of Metasys®.

# Installation Procedures

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## *General Information*

When installing and connecting function modules:

- follow NEC and local codes
- observe maximums as specified in the specification table and in these installation guidelines

# 2-Wire Remote Transducer

Figure 3 diagrams the wiring for 2-wire remote transducer applications using the OBE.

Table 3: 2-Wire Transducer Applications

Field Device	TBF Connections		Action On Incremental Based On +12V Signal (+)	Notes
	1	2		
AQ-4102	2	1	Resistance increases between term 6 and 7	1
EPT-1022	Red	Red/White	Pneumatic increase	1
V-9010	+	-	Pneumatic increase	
V-9012	Red	Black	Pneumatic increase	

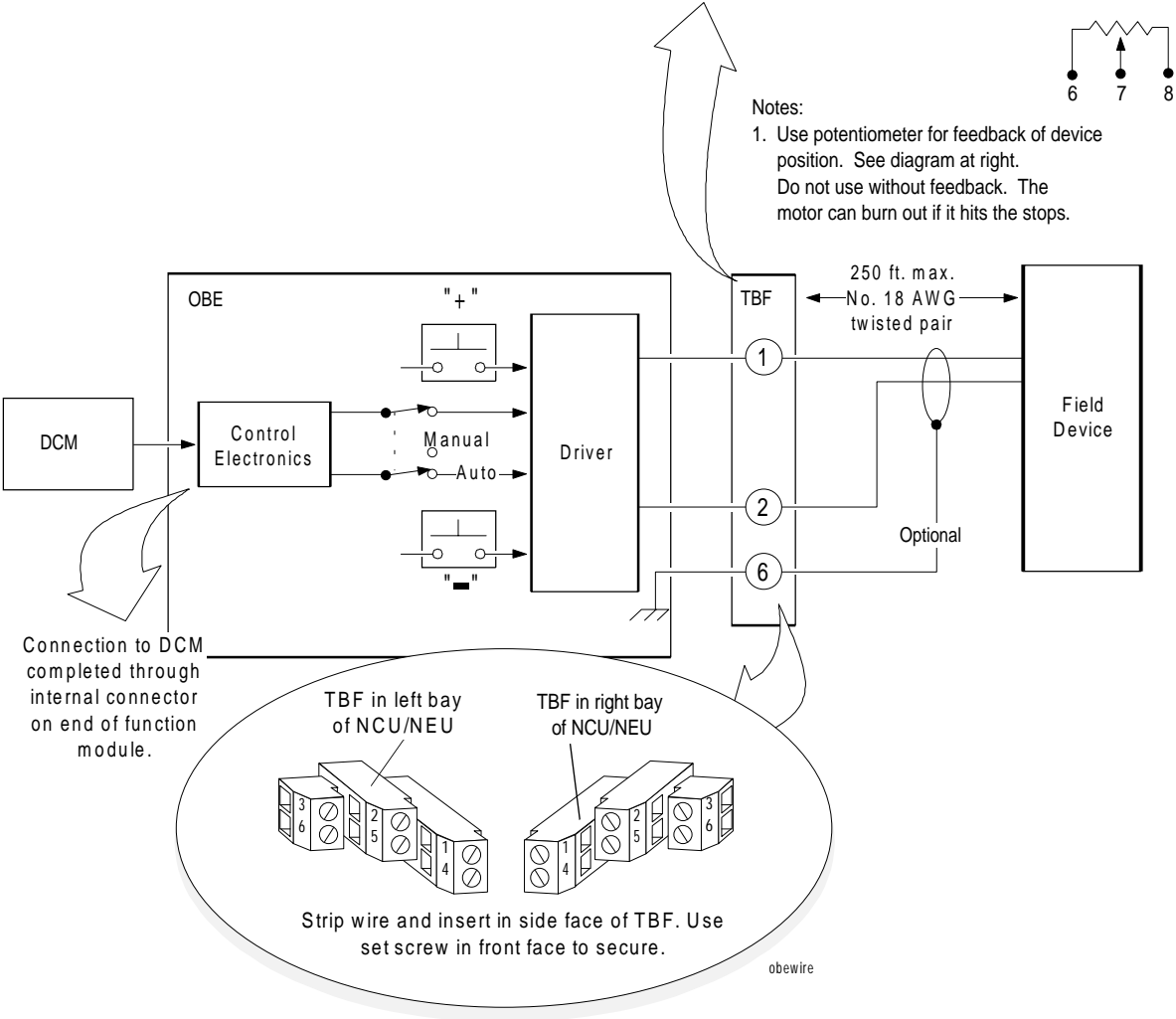
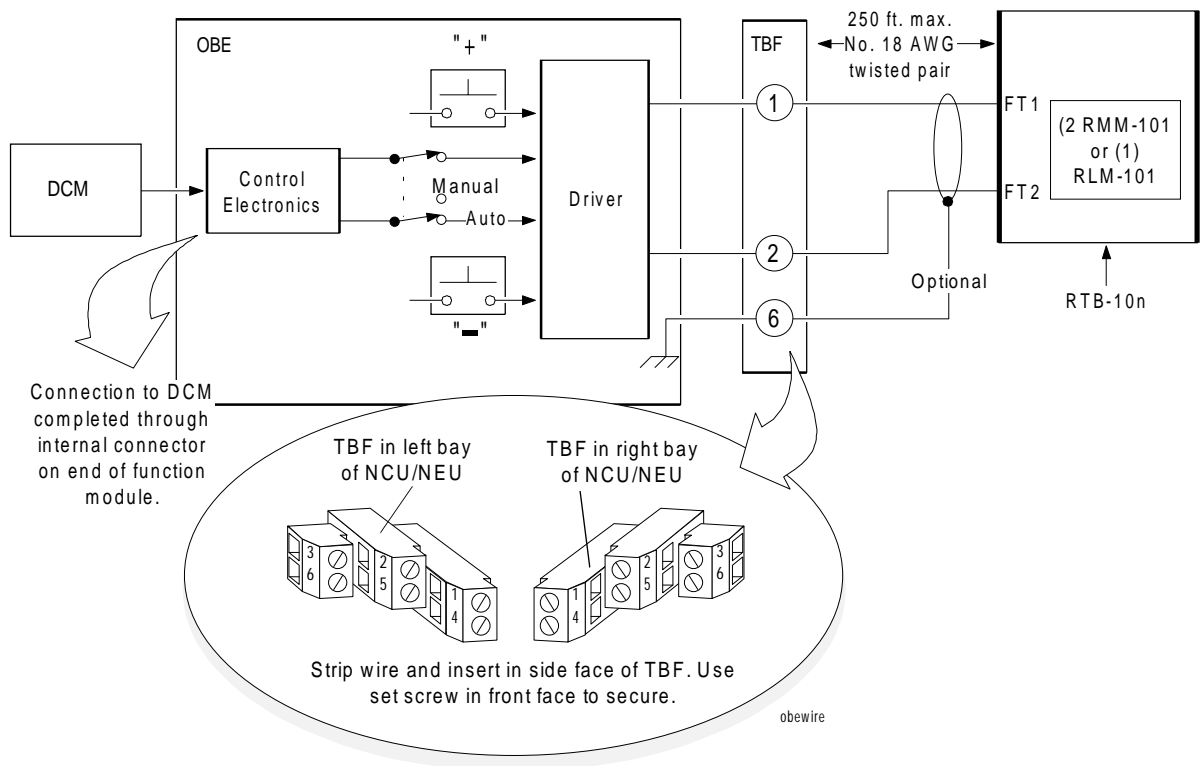


Figure 3: Wiring for 2-Wire Remote Transducer Application

Figure 4 diagrams the wiring for the RLM/RMM Relay applications using the OBE.



**Figure 4: Wiring for RLM/RMM Relay Application**

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## ***Physical Installation***

### **Assumptions**

The following procedure for the physical installation of the OBE Function Module assumes:

- Panel (NCU or NEU) is installed.
- Connections to field devices are complete.
- You have engineering drawings defining details for the installation.
- You are familiar with Metasys Network terminology, and the location and operation of power switches.

### **Procedure**

For each OBE Function Module in the network, perform the following steps.

1. Set the Auto/Manual switch to Manual.
2. Refer to the engineering drawings, and identify the proper panel and slot number location for this module.
3. Open the latch.
4. Insert the module in the appropriate slot.
5. Close the latch, locking function module in place.

# Commissioning Procedures

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## *Physical Verification*

### **Assumptions**

The following procedure for the physical verification of the OBE Function Module assumes:

- Physical installation of the PWR101 at the NCU/NEU panel is complete.
- Power is available at the panel power supply, and at the field device.

### **Procedure**

For each OBE Function Module in the network, perform the following steps.

1. Power up the appropriate DCM power supply.
2. Press switch (+) on the OBE. Verify that the appropriate device is activated, as defined in the engineering drawings.
3. Press switch (-) on the OBE. Verify that the appropriate device is activated and/or that the appropriate device is deactivated as defined in the engineering drawings.

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## *Software Verification*

### **Assumptions**

The following procedure for the software verification of the OBE Function Module assumes:

- Physical installation at the NCU/NEU panel is complete, including NCM, DCM, FM, etc.
- The operating software for the network has been downloaded to the NCM controlling the panel.
- An Operator Workstation is available.

### **Procedure**

For each OBE Function Module in the network, perform the following steps.

1. Select the System summary that includes this OBE object.
2. Set Auto/Manual switch on the OBE to Auto.
3. Adjust the software override command and verify that the object's Value attribute (as seen in the summary) matches the actual value for the field device.



# Troubleshooting Procedures

## Troubleshooting Chart

Use the diagram in Figure 5 as a troubleshooting guide. It applies for failures between point objects and field devices connected through an OBE Function Module.

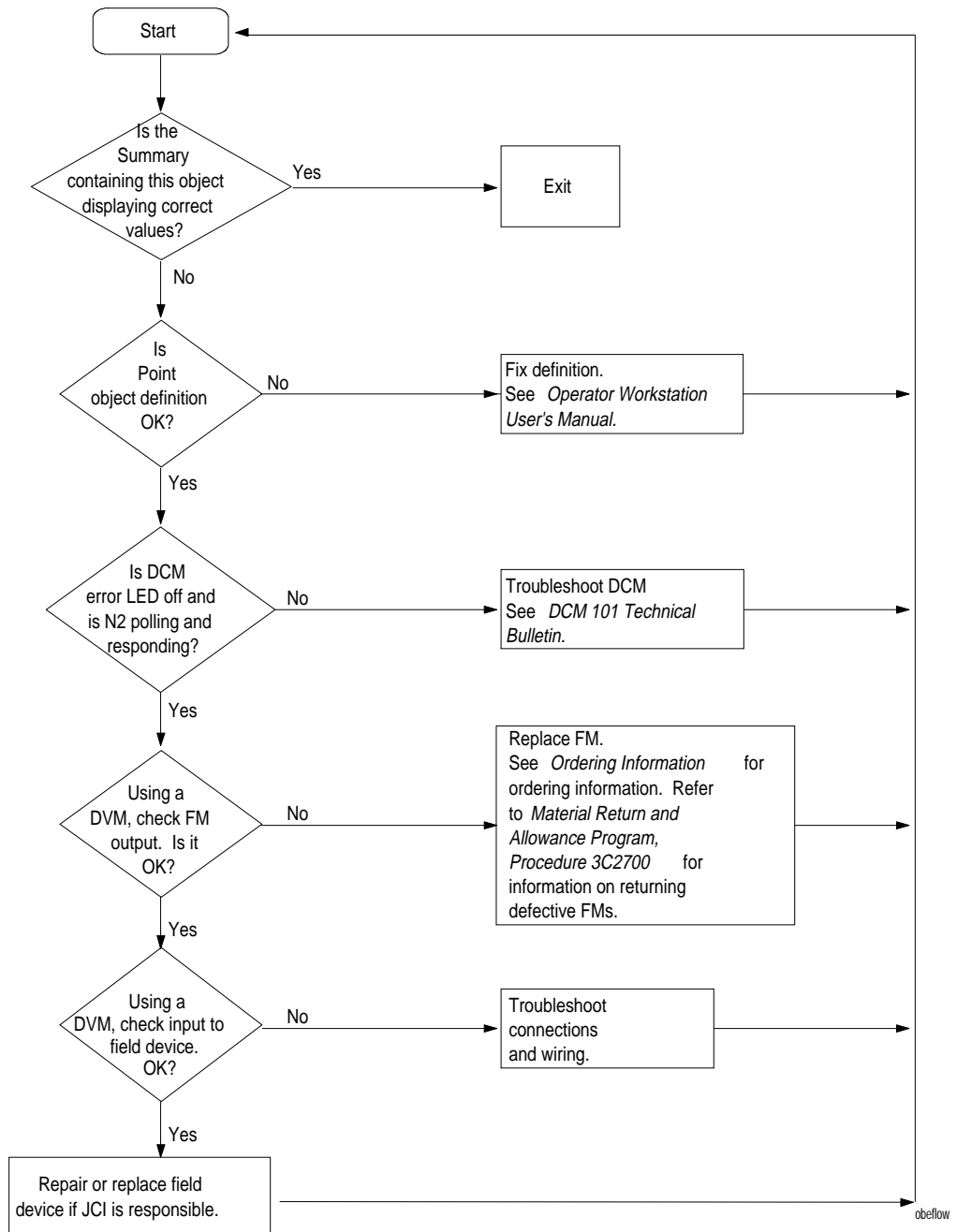


Figure 5: OBE Troubleshooting

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**Ordering  
Information**

**Table 4: Ordering Information**

Description	Product Code Number
OBE Function Module	FM-OBE101-0

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## Notes

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## Notes



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